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POSTAL RATE COMMISSION
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BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D. C. 20268-0001

POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000-1

DIRECT TESTIMONY OF
MARK F. RAMAGE
ON BEHALF OF
UNITED STATES POSTAL SERVICE

CONTENTS

AUTOBIOGRAPHICAL SKETCH.....	2
I. PURPOSE AND SCOPE OF TESTIMONY	3
II. Sample Design	3
III. Data Collection	4
IV. Data Validation and Editing	5
V. Estimation.....	6

TABLES

Table 1	CV's for Mailprocessing Costs
Table 2	CV's for City Carrier In Office Costs
Table 3	CV's for Supervisors and Special Delivery Costs

ASSOCIATED LIBRARY REFERENCES

USPS-LR-I-12/R2000-1	IOCS Statistical and Computer Documentation (source code and data on CD-ROM)
USPS-LR-I-13/R2000-1	IOCS-CODES Computer System Documenation
USPS-LR-I-14/R2000-1	Handbook F-45, In-Office Cost System, Field Operating Instructions
USPS-LR-I-15/R2000-1	IOCS-CODES Computer System Source Code (on CD-ROM)

WORKPAPERS

Workpaper A	Base Year 1998 LIOCATT for City Carriers (A-1 and A-2)
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1
2 DIRECT TESTIMONY
3 OF
4 MARK F. RAMAGE

5 AUTOBIOGRAPHICAL SKETCH
6

7 My name is Mark F. Ramage. I am a Mathematical Statistician in Cost Systems,
8 Finance. I have been employed in this capacity by the Postal Service since 1997. In my
9 present position, I am the program manager for the In-Office Cost System. I have also
10 held positions as Sr. Mathematical Statistician and as Sr. Operations Research analyst
11 for the Postal Service between 1983 and 1987. In those positions, I worked on statistical
12 issues for the Carrier Cost Systems and for the In-Office Cost System.

13
14 From 1987 to 1997, I was a Statistician for the Office of the Consumer Advocate of the
15 Postal Rate Commission. In that capacity, I testified on a number of statistical issues
16 before the Postal Rate Commission. From 1980 to 1983, I was employed as a
17 Mathematical Statistician with the Bureau of the Census.

18
19 I received a Bachelor of Science Degree in Mathematics in 1978 and a Master of Arts
20 Degree in Statistics in 1980, both from the University of Maryland. I have completed
21 additional postgraduate work in mathematical statistics and survey sampling at George
22 Washington University.

23
24 I am a member of the American Statistical Association and the Washington Statistical
25 Society.

1

2 I. PURPOSE AND SCOPE OF TESTIMONY

3 The Postal Service's revenue and cost accounting systems do not generally coincide
4 perfectly with, or specifically identify, individual categories of mail or service. Therefore,
5 the Postal Service must rely on various statistical systems and special studies to
6 provide estimates of accrued costs for certain postal operating functions, and to provide
7 estimates of revenues, volumes and attributable costs for the various categories of mail.
8 The In-Office Cost System (IOCS) is a work sampling system designed to produce cost
9 estimates for various employee activities in the office.

10

11 The purpose of my testimony is to describe IOCS. My testimony describes the sample
12 design, data collection methodology, the editing and processing of IOCS sample data,
13 the types of estimates produced from the IOCS, and the reliability of major estimates.

14

15 II. Sample Design

16 The In-Office Cost System uses a probability sample of employee activity to develop
17 estimates of proportions of employee work time spent on various office functions, and
18 for certain functions, the proportions of time spent handling and/or processing specific
19 mail categories.

20

21 The IOCS is an ongoing system with a sample selected for each week. Approximately
22 4-5 weeks prior to each sample week, sample employees are selected from the most
23 current payroll files for the IOCS sample offices. Employees are sampled independently

1 within Cost Ascertainment Group (CAG) for each of five employee crafts: (1) Clerks, (2)
2 Mailhandlers, (3) City Carriers, (4) Special Delivery Messengers, and (5) Supervisors.
3 Selected employees are then randomly assigned an instant in time during the sample
4 week for observation.

5
6 The IOCS sample design documentation along with sample selection programs are
7 contained in the IOCS Statistical and Computer System Documentation,
8 USPS-LR-I-12/R2000-1. Section II of the IOCS System Documentation describes the
9 sample design, Section IV describes the sample selection programs, and Appendix H
10 (CD-ROM) contains the sample selection programs.¹

12 III. Data Collection

13 The IOCS data collection instrument consists of a data entry program residing on a
14 laptop computer. This hardware and software is referred to as the IOCS Computerized
15 On-Site Data Entry System (IOCS-CODES). At the scheduled sample time, the data
16 collector locates the sample employee and enters data describing the employee's
17 observed activity directly into CODES. The data entry software guides the data
18 collector through the appropriate questions and performs basic consistency checks on
19 the entered data. Sample data from various laptops at one site are transferred to a
20 base unit computer (a desk top PC). Then, at the end of each week, the data are
21 transmitted from the base units to a mainframe computer for further editing and
22 processing.

1
2 An overview of field IOCS test administration is contained in section V of the IOCS
3 Documentation (USPS-LR-I-12/R2000-1). Detailed descriptions of IOCS data collection
4 procedures are contained in the IOCS Field Operating Instructions, Handbook F-45
5 (USPS-LR-14/R2000-1). IOCS-CODES computer system documentation and source
6 code are contained in USPS-LR-I-13/R2000-1 and USPS-LR-I-15/R2000-1,
7 respectively.

8 9 IV. Data Validation and Editing

10 After the IOCS data are transmitted to the mainframe computer, a series of COBOL and
11 SAS programs perform data validation, editing, and automated error correction.
12 Included in this process is the assignment of activity codes used in subsequent costing
13 programs.

14
15 Data validation and editing procedures (and the programs associated with these
16 procedures) are contained in Section VI and several appendices of the IOCS Statistical
17 and Computer Documentation, USPS-LR-I-12/R2000-1. Specifically, Section VI of
18 USPS-LR-I-12 describes the validation and editing programs, Appendix B contains a
19 flowchart documenting the assignment of activity codes, Appendix C describes detailed
20 edit rules, Appendix D documents the within county periodicals edits, and Appendix E
21 describes the encirclement rules used to assign special service activity codes. All

¹ Throughout this testimony, appendices A through I refer to the appendices of the IOCS Statistical and Computer Documentation, USPS-LR-I-12/R2000-1.

validation and editing programs are contained on the CD-ROM described in Appendix H.

V. Estimation

The IOCS sample data are used to produce estimates of costs by function for each craft group. Cost weight factors are assigned to each sample observation, reflecting both the sample design and accrued costs for CAG and craft group. Hence, a dollar amount can be associated with each record in the IOCS data file. The cost weighted IOCS data file is then converted into a final SAS data set which is used for producing cost estimates.

Several craft reports are produced from the final IOCS data file that provide CRA spreadsheet inputs. One such report is the City Carrier LIOCATT report. A hard-copy of this report is included as Workpaper A to my testimony.

As with any sample based estimate, selection of a different sample (according to the same sample design), could result in slightly different estimates. The amount of variation one could expect due to sampling alone is quantified by the coefficient of variation (CV). CV's can be used to produce confidence intervals for estimates. Table 1 presents cost estimates, their estimated CV's, and 95 percent confidence intervals for Cost Segment 3.1 Mail Processing. Tables 2 and 3 provide similar estimates for City Carriers, and for Supervisors and Special Delivery Messengers.

The development of the cost weighting factors, production of the final SAS data files, CV estimation, and descriptions of various craft reports are provided in Section VII of

- 1 USPS-LR-I-12/R2000-1. The source code for weighting, production of final data files,
- 2 CV estimation, and craft reports is contained on the CD-ROM, described in Appendix H.

Table 1

**BY98 MODS-based estimated mean distributed costs (000's) and CVs, All Offices
Cost Segment 3.1 Mail Processing - Clerks and Mailhandlers**

Subclass	Cost Est.	Std Deviation	95% Lower Limit	95% Lower Limit	CV
<u>First Class</u>					
Letters and Parcels	4,972,053	22,659	4,927,641	5,016,465	0.46%
Presort Letters and Parcels	1,226,433	15,014	1,197,006	1,255,860	1.22%
Private Mailing Cards	181,924	5,570	171,007	192,841	3.06%
Presort Cards	37,759	2,600	32,662	42,855	6.89%
Priority	645,444	8,336	629,106	661,782	1.29%
Express	94,151	3,180	87,919	100,383	3.38%
Mailgrams	166	103	0	367	62.13%
<u>Periodicals</u>					
Within County	13,126	1,607	9,976	16,276	12.24%
Regular	566,261	9,775	547,102	585,420	1.73%
Non Profit	94,885	4,161	86,730	103,040	4.38%
Classroom	5,177	953	3,310	7,044	18.40%
<u>Standard (A)</u>					
Single Piece Rate	94,386	4,711	85,152	103,620	4.99%
Regular Carrier Route	303,067	7,790	287,799	318,335	2.57%
Regular Other	2,111,573	19,437	2,073,476	2,149,670	0.92%
Non Profit Carrier Route	46,614	3,365	40,019	53,209	7.22%
Non Profit Other	427,658	9,659	408,726	446,590	2.26%
<u>Standard (B)</u>					
Parcels - Zone Rate	246,815	7,622	231,877	261,753	3.09%
Bound Printed Matter	128,518	6,288	116,194	140,842	4.89%
Special Rate	82,890	5,084	72,925	92,855	6.13%
Library Rate	11,860	1,579	8,765	14,955	13.32%
USPS	129,896	4,853	120,385	139,407	3.74%
Free for Blind/Handicapped	14,924	1,951	11,100	18,748	13.07%
International	261,969	6,037	250,137	273,801	2.30%
Registry	36,966	2,107	32,837	41,095	5.70%
Certified	31,865	1,972	27,999	35,731	6.19%
Insurance	1,759	368	1,038	2,480	20.92%
COD	554	248	67	1,041	44.83%
Money Orders	3,655	N/A	N/A	N/A	N/A
Stamped Envelopes	122	N/A	N/A	N/A	N/A
Special Handling	485	324	0	1,120	66.87%
P.O. Box	2,867	N/A	N/A	N/A	N/A
Other Special Services	41,241	2,231	36,868	45,614	5.41%
Total	11,817,062				

Table 2

**BY98 LIOCATT estimated mean distributed costs (000's) and CVs, All Offices
Cost Segment 6.1 Mail Processing - City Carriers Direct Labor Inputs**

Subclass	Cost Est. ²	Std Deviation	95% Lower Limit	95% Lower Limit	CV
<u>First Class</u>					
Letters and Parcels	1,062,576	9,443	1,044,067	1,081,085	0.89%
Presort Letters and Parcels	469,772	6,361	457,305	482,239	1.35%
Private Mailing Cards	54,433	2,221	50,080	58,787	4.08%
Presort Cards	18,878	1,480	15,978	21,778	7.84%
Priority	37,597	1,855	33,961	41,233	4.93%
Express	2,601	516	1,589	3,613	19.85%
Mailgrams	0	0	0	0	0.00%
<u>Periodicals</u>					
Within County	8,069	913	6,280	9,859	11.32%
Regular	133,157	3,467	126,362	139,952	2.60%
Non Profit	29,824	1,595	26,697	32,951	5.35%
Classroom	381	165	58	703	43.22%
<u>Standard (A)</u>					
Single Piece Rate	13,348	1,133	11,128	15,568	8.49%
Regular Carrier Route	284,702	4,999	274,904	294,500	1.76%
Regular Other	525,706	6,600	512,769	538,642	1.26%
Non Profit Carrier Route	20,000	1,332	17,390	22,610	6.66%
Non Profit Other	106,645	3,044	100,680	112,610	2.85%
<u>Standard (B)</u>					
Parcels - Zone Rate	6,927	785	5,389	8,466	11.33%
Bound Printed Matter	6,895	743	5,439	8,352	10.77%
Special Rate	1,868	362	1,159	2,576	19.36%
Library Rate	634	333	0	1,287	52.60%
USPS	10,549	1,077	8,439	12,659	10.20%
Free for Blind/Handicapped	983	275	443	1,523	28.02%
International	10,955	948	9,097	12,814	8.65%
Registry	1,683	334	1,028	2,338	19.86%
Certified	27,400	1,677	24,112	30,687	6.12%
Insurance	1,075	296	495	1,655	27.52%
COD	728	251	237	1,220	34.40%
Money Orders	0	0	0	0	0.00%
Stamped Envelopes	0	0	0	0	0.00%
Special Handling	0	0	0	0	0.00%
P.O. Box	425	150	131	719	35.28%
Other Special Services	4,308	565	3,200	5,415	13.12%
Total	2,842,120				

² Standard deviations are estimated from a bootstrapped FORTRAN approximation to Carrier LIOCATT cost estimates. Confidence intervals and CV's are developed by applying the standard deviation estimates to the actual BY98 CRA input. See USPS-LR-I-12/R2000-1 for the programs used.

Table 3

**BY98 estimated mean distributed costs and CVs, All Offices
Supervisors and Special Delivery Messengers**

Subclass	Cost Est.	Std Deviation	95% Lower Limit	95% Lower Limit	CV
<u>Supervisors</u>					
Mail Processing	873,518	8,371	857,111	889,924	0.96%
Central Mail Mark-up	61,796	2,708	56,488	67,104	4.38%
Window Service	144,315	6,943	130,708	157,923	4.81%
Administrative and Support	29,363	1,804	25,826	32,899	6.15%
City Delivery Carriers	541,761	6,780	528,473	555,049	1.25%
Special Delivery Messengers	6,443	836	4,805	8,080	12.97%
Rural Delivery Carriers	22,288	4,974	12,539	32,038	22.32%
Vehicle Service	34,661	1,559	31,606	37,716	4.50%
Employees/Labor	713	250	223	1,203	35.07%
Higher Level Supervisors	245,253	5,127	235,204	255,301	2.09%
Gen Supv.: Mail Processing	746	259	238	1,254	34.76%
Gen Supv.: Collection/Delivery	414	222	0	849	53.61%
Supervisor Training	49,275	2,116	45,127	53,422	4.29%
Quality Control/Revenue Prot.	34,908	1,693	31,589	38,226	4.85%
Supv. Of Mixed Clk/Mailhandler Activities	97,040	3,467	90,245	103,835	3.57%
Supv. Of One or More Crafts	581,643	10,183	561,684	601,603	1.75%
Other	788,311	10,155	768,408	808,214	1.29%
Total	3,512,447				
<u>Special Delivery Messengers</u>					
Street Time	59,600	723	58,183	61,016	1.21%
Other	11,534	723	10,117	12,951	6.27%
Total	71,133				

